UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/599,269	06/22/2000	Stephen W. Rose	OF-102US	8360

24314 7590 10/09/2002

JANSSON, SHUPE & MUNGER, LTD
245 MAIN STREET
RACINE, WI 53403

EXAMINER
OCAMPO, MARIANNE S

ART UNIT	PAPER NUMBER
1723	16

DATE MAILED: 10/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/599,269	ROSE ET AL.	
	Examiner	Art Unit	
	Marianne S. Ocampo	1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 June 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Declaration under 37 CFR 1.131

1. The declaration of Mr. Stephen Rose, one of the applicants, filed on 6-21-02 under 37 CFR 1.131 is sufficient to overcome the Shane (US 6,143,106) reference, which is one of the prior art applied in making the 103 rejection in the previous office action. In light of the declaration filed under 37 CFR 1.131 which lead to the withdrawal of the Shane reference, new prior art, US 5,904,846 (Clements et al.), has been found. The rejections based on the new prior art is given below.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 5 – 9, 17 and 27 – 31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a). With regards to claims 5, 8, 28 and 30 - 31, the term "less than about 0.15 mm" is deemed indefinite since it is unclear what the range of values being referred to by " less than

about 0.15 mm". In the specification, page 5, lines 10 – 11, only one value of 0.005 inch which is equivalent to 0.127 mm, has been mentioned. Does "less than about 0.15 mm" mean only that of 0.005 inch (0.127 mm) or does it include other values which are not mentioned including those below 0.127 mm? See MPEP section 2173.05 (b), subsection A and case law, ***Amgen, Inc. v. Chugai Pharmaceutical Co..,*** 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Circ. 1991).

b). Similarly, claims 6, 9 and 29 recite the limitation "less than or equal to about 0.13 mm". The limitation is deemed indefinite since it is unclear what the range of values being referred to by " less than or equal to about 0.13 mm". Is it less than 0.13 mm, or equal to 0.13mm or does "about 0.13mm" only mean a value of 0.127 mm, as in the specification, page 5, lines 10 – 11? The only one value of 0.005 inch which is equivalent to 0.127 mm, has been mentioned in page 5, lines 10 - 11. See MPEP section 2173.05 (b), subsection A and case law, ***Amgen, Inc. v. Chugai Pharmaceutical Co..,*** 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Circ. 1991).

c). Claim 7 recites the limitation "less than about $45g/m^2$". What values are considered or being claimed in the limitation? Is it any value below $45g/m^2$ or not? See MPEP section 2173.05 (b), subsection A and case law, ***Amgen, Inc. v. Chugai Pharmaceutical Co..,*** 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Circ. 1991).

d). Claims 17 and 27 recite the limitation "about 170-195°F" in line 2. The limitation is deemed indefinite since it is unclear what the range of temperature values being referred to by "about 170-195°F". See MPEP section 2173.05 (b), subsection A and case law, ***Amgen, Inc. v. Chugai Pharmaceutical Co..,*** 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Circ. 1991).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1 – 2, 4, 7, 10 - 12 and 18 - 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoyell et al. (US 5,543,047) in view of Marshall et al. (WO 98/07905).

6. With regards to claim 1, Stoyell et al. disclose a pleated filter cartridge for removing particulates from a liquid, the pleated filter cartridge being of the type including a perforated core (20), a pair of end caps (40) and an annular non-woven filter element (10) around the core (20) formed by substantially axially-parallel pleats (11) of at least one sheet (12) of filter material, the filter element (10) having opposite ends each in sealing engagement with one of the end caps (40), characterized in that the filter material (12) being a non-perforated, non-woven polymeric material made of polyethylene in the form of a PTFE membrane (see element G), as in figs. 1 - 4 and cols. 3 - 17. Stoyell et al. fail to disclose the filter material being flash-spun plexifilamentary high density polyethylene fibril having a pressure drop of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of at least 98% of 1 – 2 micron particulates at a pressure

differential of 30 psid. Marshall et al. teach a filter material being formed of flash-spun plexifilamentary high density polyethylene fibril having a pressure drop of less than 4 psid at a flow rate of 10 gal/hr and a filtration efficiency of at least 98% of 1 – 2 micron particulates at a pressure differential of 30 psid, as in the abstract and in pages 3 and 7 - 10. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter material of Stoyell et al., by substituting the filter material (PTFE membrane) with the filter material (plexifilamentary high density polyethylene fibril) taught by Marshall et al., in order to provide a much improved filter medium, which has greater barrier and strength properties than the PTFE membranes, as well as provide a filter medium which is cheaper to manufacture and improved permeability, as in pages 8 – 10.

7. Concerning claim 2, Stoyell et al. as modified by Marshall et al. further teach the filter material having a pressure drop of less than about 1. 5 psid at a flow rate of 10 gal/hr and the filtration efficiency being at least about 99% of 1 – 2 micron particulates at a pressure differential of 30 psid, as in the abstract and in page 27 (see examples 30 and 31). The same motivation applied above, is applied here.

8. Regarding claim 4, Stoyell et al. as modified by Marshall et al., further teach the filter material in example 31, having a Gurley Hill porosity rating no greater than 5 sec/100 cc, in particular having a Gurley Hill porosity rating of 3.57 sec/100 cc, as in page 27. The same motivation applied in claim 1, is applied here.

9. With respect to claim 7, Stoyell et al. as modified by Marshall et al. also teach the filter material having a basis weight of less than about 45 g/m^2, in particular a value of 42.7 g/m^2, as in page 27.

10. Regarding claim 10, Stoyell et al. also disclose the filter element (10) having at least two layers including a mesh layer (drainage layer 13 or 14) with the filter layer (12), as in col. 5.

11. Concerning claim 11, Stoyell et al. disclose the mesh layer (upstream drainage layer 13 next to the core 20) being between the filter layer (12) and the core (20), as in figs. 1 and 3 and in col. 5.

12. With respect to claim 12, Stoyell et al. also disclose a single layer of the filter material (12) serving as a sole filtering layer, as in col. 5, line 30 and fig. 4.

13. Regarding claims 18 and 20, Stoyell et al. further disclose a containment sleeve of polymeric netting material (50, 132) enclosing the annular filter element (10), but Stoyell et al. as modified by Marshall et al, fail to teach the containment sleeve being formed of polyethylene netting. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the material of construction of the containment sleeve of the filter element from any polymeric mesh/netting to specifically of polyethylene netting, in order to provide a high

temperature resistant, chemical resistant and high tensile strength (good stability) containment sleeve for the filter element (see Hawley's Condensed Chemical Dictionary for well known desirable properties of polyethylene, page 897). The case law ***In re Leshin***, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) stated that a prima case of obviousness exists in a selection of a known (thermoplastic) plastic material/netting (polyethylene netting) to make a container (such as a containment sleeve of a filter cartridge/element) of a type made of plastics (or polymeric netting/material) prior to the invention.

14. Concerning claims 19 and 21, Stoyell et al. further disclose the core (20) being formed of any suitable material having sufficient strength and compatible with the fluid being filtered by the cartridge, and the end caps (40) being formed of a fluoropolymer such as FEP which is fluorinated ethylene-propylene resin, a form of a polyethylene polymer, as in cols. 7 – 8. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the material of construction of the core and end caps to particularly that of polyethylene, in order to provide a core and end caps of the filter element, which is high temperature resistant, chemical resistant and has high tensile strength (good stability), for an improved filter cartridge (see Hawley's Condensed Chemical Dictionary for well known desirable properties of polyethylene, page 897). A pleated cartridge having the embodiment of a polyethylene core and end caps would have a longer life span than conventional pleated filters having metallic core and end caps which is corrosion-prone.

15. Regarding claim 22, Stoyell et al. also disclose a single layer of the filter material (12) serving as a sole filtering layer, as in col. 5, line 30 and fig. 4.

16. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Stoyell et al. and Marshall et al. as applied to claim 1 above, and further in view of DuPont TYVEK product specification/literature, "The Medium that Fits a Wide Variety of Filtration Needs", 8/95 (filed with the IDS on 3-5-01).

17. With regards to claim 3, Stoyell et al. as modified by Marshall et al. further teach the mean flow pore size of the filter material (i.e. example 31) being greater than 4 microns, as in page 27, but fail to teach the nominal pore filtration rating of 1 micron. DuPont, which is the same assignee/company who owned the patent by Marshall et al., teach the TYVEK filter material which is the same filter material taught in Marshall et al., being pleated and formed in a cartridge, formed of 100% high density polyethylene and having a nominal pore filtration rating of 1 micron, having a filtration efficiency of 99.98% of 1 – 2 micron particulates at 30 psid and a mean flow pore size greater than 4 microns (in particular 4.8 microns), as in pages 2 – 3 of the literature/product specification. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter material of Stoyell et al as modified by Marshall et al., by substituting it with the filter material (TYVEK Soloflo) taught in the DuPont product specification/literature, "The Medium that Fits a Wide Variety of Filtration Needs", 8/95 (filed with the IDS on 3-5-01), as an alternative filter material, as well as an improved TYVEK/filter

material which is not only an efficient and effective filter material but also is exceptionally strong in resisting abrasions, tears and punctures and dimensionally stable at high operating temperatures up to 270°F (132 °C) and very light weight. Using a light weight and very strong and stable filter medium such as TYVEK Soloflo in a pleated cartridge of Stoyell et al. as modified by Marshall et al., would make the pleated cartridge not only effective but would be light weight and very durable as a filter cartridge.

18. Claims 5 – 6, 8 – 9, 13, 23 and 28 - 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoyell et al. and Marshall et al., as applied to claim 1 above, and further in view of Miyagi et al. (US 4,588,464) and "Ethylene Polymers, LDPE" (Encyclopedia of Polymer Science and Technology, abstract page, properties, pages 1 – 4 and physical properties, pages 1 - 12, 10/22/2001).

19. With regards to claims 13 and 23, Stoyell et al. as modified by Marshall et al., teach the mesh layer being a polymeric mesh layer, but not specifically formed of low-density polyethylene. Miyagi et al. teach a similar pleated filter cartridge to the one taught by Stoyell et al. as modified by Marshall et al., the pleated filter cartridge comprising a perforated core (12), a pair of end caps (8) and an annular non-woven filter element (1, 2) around the core (12) formed by substantially axially parallel pleats of at least one sheet of filter material (1) and the element having opposite ends (4) in sealing engagement with the end caps (8), and the filter element having at least two layer including at least one mesh layer (2) and the filter material (1), wherein

the mesh layer (2) is formed of a polymeric mesh/net formed of polyethylene such as PFA, FEP, ETFE, etc.), as in cols. 2 – 5 and figs. 1, 6 and 8. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the material of construction of the mesh layer of the filter element of the pleated cartridge of Stoyell et al. as modified by Marshall, by adding the materials taught by Miyagi et al., in order to provide alternative materials of construction for the mesh layer which has great flexibility in order to withstand filtration pressures (see col. 3). Although Stoyell et al., as modified by Marshall et al. and Miyagi et al., do not teach the polyethylene mesh layer being formed of low density polyethylene (also known as LDPE), it is considered obvious to one of ordinary skill in the art to modify the material of construction of the mesh layer from a polyethylene material (i.e. PFA, FEP, etc). to a low density polyethylene (LDPE), in order to provide a mesh layer with a lot of desirable qualities such as low cost, easily available and manufactured material, and has good thermal stability and low toxicity (See "Ethylene Polymers, LDPE", abstract, page 1 and properties of LDPE, pages 1 – 4). With regards to other limitations recited in claim 23, see paragraph 4 or rejection of claim 1.

20. Concerning claims 5, 8, and 28, Stoyell et al. as modified by Marshall et al. fail to teach the thickness of the filter material being less than about 0.15 mm. Miyagi et al. also teach the filter material (1) having a thickness of 30 – 200 μm, which is equivalent to 0.03 mm – 0.20 mm, as in col. 2. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the thickness of the filter material of Stoyell et al. as modified by Marshall et al. to a thickness value taught by Miyagi et al. (particularly from 0.03 mm to about 0.15 mm), in

order to provide a pleated filter cartridge which can accommodate more pleats per unit area, thereby increasing the filtration area and holding capacity of the pleated cartridge (see cols. 1 – 2 of Miyagi et al.).

21. With respect to claims 6, 9 and 29, Stoyell et al. as modified by Marshall et al. and Miyagi et al. further teach the thickness values of 30 – 200 μm, which is equivalent to 0.03 mm – 0.20 mm, which include several values in the claimed range of "less than about or equal to 0.13 mm", as in col. 2.

22. Regarding claims 30 - 31, Stoyell et al. have disclosed the at least one sheet of filter material (12) could be a single sheet of filter material, but Stoyell et al. as modified by Marshall et al. fail to teach the thickness of the sheet of filter material being less than about 0.15 mm, whereby the total thickness of the filter material being less than about 0.15 mm. Miyagi et al. also teach the filter material (1) having a thickness of 30 – 200 μm, which is equivalent to 0.03 mm – 0.20 mm, as in col. 2. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the thickness of the filter material of Stoyell et al. as modified by Marshall et al. to a thickness value taught by Miyagi et al. (particularly from 0.03 mm to about 0.15 mm), in order to provide a pleated filter cartridge which can accommodate more pleats per unit area, thereby increasing the filtration area and holding capacity of the pleated cartridge (see cols. 1 – 2 of Miyagi et al.).

23. Claims 14 – 15, 17, 24 - 25 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stoyell et al., Marshall et al., Miyagi et al. and article "Ethylene Polymers, LDPE", as applied to claims 13 and 23 above, and further in view of "Ethylene Polymers, HDPE", polymer structure and properties of HDPE section, pages 1 – 6, and Miller et al. (US 5,252,207).

24. With respect to claims 14 and 24, Stoyell et al.,as modified by Marshall et al., Miyagi et al and article "Ethylene Polymers, LDPE", teach the low density polyethylene (LDPE) material used as the (polyethylene) mesh layer of Stoyell et al. as modified by Marshall et al., Miyagi et al. and the article "Ethylene Polymers, LDPE" further teach the softening temperature of low density polyethylene (LDPE) being in the range of 90 – 93 °C, which is about 194 to 199 °F, as in page 3 of the physical properties section of the article, "Ethylene Polymers, LDPE", but fail to teach the polyethylene mesh being tack-point connected to the filter material without having compromised the filter material. It is known in the art that high density polyethylene (also known as HDPE, in which the TYVEK filter material comprised thereof) having a softening temperature range of 126 – 133 °C, equivalent to 258.8 – 271.4 °F, as in page 2 of the article, "Ethylene Polymers, HDPE", polymer structure and properties of HDPE section. The softening temperature range of LDPE of 90 – 93 °C, which is about 194 to 199 °F, is lower than the lower end value of 126 °C (258.8 °F) of the softening temperature range of HDPE filter material (i.e. TYVEK). Miller et al. (207) teach a pleated filter cartridge comprising a perforated core (11), a pair of end caps (12, 13) and an annular non-woven filter element (20) around the

core (11) formed by substantially axially parallel pleats of at least one sheet of filter material (23) and the element having opposite ends each in sealing engagement with the end caps (12, 13), and the filter element having a polymeric mesh layer (drainage layer 24) between the at least one sheet of filter material (23) and the core (11) and the polymeric mesh layer (24) being tack point connected (i.e. the netting/mesh 24 being bonded at various points on the filter layer 23 by beads of polymeric resin 25) without having compromised the filter material (23), as in fig. 2, 4 - 5 and in cols. 3 – 8 and 12. It is considered obvious to one of ordinary skill in the art at the time of the invention to modify the filter cartridge of Stoyell et al, as modified by Marshall et al, Miyagi et al. and articles, "Ethylene Polymers, LDPE" and "Ethylene Polymers, HDPE", by adding the embodiment taught by Miller et al. (of adhesively bonding/tack point connecting the mesh layer 24 to the filter layer/material 23), in order to provide an improved filter element having a means for improving and increasing life of the filter element, thereby maximizing resistance to fatigue failure cause by flexure of the filter element/material during use of the filter cartridge, as in col. 8.

25. With regards to claim 15 and 25, Miller et al. further teach the tack-point connection/bonding by means of spaced polymeric beads of the mesh layer (24) and the filter layer (23) being performed prior to pleating, as in col. 7, lines 33 – 49.

26. Concerning claims 17 and 27, the article "Ethylene Polymers, LDPE" further teach the softening temperature of low density polyethylene (LDPE) being in the range of 90 – 93 °C,

which is about 194 to 199 °F, as in page 3 of the physical properties section of the article, "Ethylene Polymers, LDPE", which includes at least a couple of values in the claimed range in these claims.

Response to Arguments

27. Applicant's arguments with respect to claims 1 - 31 have been considered but are moot in view of the new grounds of rejection presented above. Since the previously applied primary reference, Shane (US 6,143,106) has been withdrawn in light of the Oath and Declaration under 37 CFR 1.131 filed by Mr. Stephen Rose, one of the inventors, newly found prior art has been provided above.

Conclusion

28. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne S. Ocampo whose telephone number is (703) 305-1039. The examiner can normally be reached on Mondays to Fridays from 8:00 A.M. to 4:30 P.M..

29. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wanda Walker can be reached on (703) 308-0457. The fax phone numbers for the

organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

30. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

M.S.O.
October 4, 2002

MATTHEW O. SAVAGE
PRIMARY EXAMINER